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| 10/828,993 | 04/21/2004 | Harold Alexis Huggins | HUGGINS 7 | 5503 |
| 47396 | 7590 | 07/08/2008 | EXAMINER | |
| HITT GAINES, PC | | | LIE, ANGELA M | |
| LSI Corporation | | | | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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| | | | |
|------------------------------|--------------------------------------|---|--|
| Office Action Summary | Application No. 10/828,993 | Applicant(s) HUGGINS, HAROLD ALEXIS | |
| | Examiner ANGELA M. LIE | Art Unit 2163 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 April 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 29 and 34-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 29 and 34-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Status

1. Currently claims 29 and 34-41 are pending. Claim 29 has been amended and claim 41 has been added.

Claim Language

2. The claim 29 currently recites intended use language, in particular it reads “said openings being used to conduct an etchant to said underlying semiconductor substrate to perform said separation”. Since claim 29 is directed to a radio frequency component (i.e. apparatus), the use language does not change its structure, thus the prior art previously used to reject the independent claim is still valid. Furthermore, in order to change the scope of the claimed by incorporating the manner in which the substrates are created, the claim language should be directed to a process or method, and not to the final component or an apparatus.
3. Moreover, the Examiner would like to draw the applicant’s attention to MPEP Chapter 2114, wherein it is disclosed that “manner of operating the device **does not** differentiate apparatus claim from the prior art”. Consequently use language does not change the scope of the newly submitted claims.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 29, 35-37 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heckaman (US Patent No. 6421012) in view of Huang et al (US Patent No. 6309914) hereinafter Huang.**

As to claim 29, Heckaman teaches a radio frequency (RF) component comprising: a dielectric layer (Figure 9, element 156, column 7, lines 6-9) having opposing first (Figure 9, the bottom side of the element 156) and second (Figure 9, the top surface of the element 156) major surfaces, the first surface is separated (Figure 9, element 158, i.e. spacers) from an underlying semiconductor substrate (Figure 9, element 154 and column 7, lines 6-9); and a patterned conductive layer (Figure 8, element 160 and figure 9, element 160) on the second major surface of the dielectric layer (as shown in figure 9). Heckaman also teaches plurality of spacers arranged in a predetermined pattern along laterally opposing sides of the patterned conductive layer (as shown in Figure 8), (the openings being used to conduct an etchant to the underlying semiconductor substrate to perform the separation). However, he does not explicitly teach that there are openings extending between the first and second major surfaces of the dielectric layer. Huang teaches a method for making a semiconductor package wherein posts are aligned with corresponding recesses (opening extending

from one major surface to another) within a top layer (Figure 9, elements 61 (posts/separators) and elements 51 (openings or holes)). It would have been obvious to one ordinary skill in the art during the time the invention was made to include openings within the dielectric layer taught by Heckaman and insert underlying posts into those openings as taught by Huang for the purpose of securely positioning two layers on top of each other as to prevent possible misplacement.

As to claim 35, Heckaman discloses the RF component wherein the plurality of openings is laterally adjacent portions of the patterned conductive layer with no openings extending through the patterned conductive layer (as shown in Figure 8, elements 160 and 58).

As to claim 36, Heckaman discloses the RF component wherein each of the plurality of openings is cylindrically shaped (as shown in figure 9, elements 158, since the spacers are round the opening securing them in the position would also have to be cylindrical).

As to claims 37 and 41, Heckaman teaches RF component wherein there is substantially uniform spacing between the adjacent openings on each of the laterally opposing sides of the patterned conductive layer (as shown in figure 8, elements 58).

As to claim 40, Heckaman teaches RF component wherein the patterned conductive layer does not intervene between the adjacent openings along each of the laterally opposing sides (as shown in figure 8, openings above the spacers (combination of Heckaman's invention in view of Huang) closest to the edges).

6. **Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heckaman (US Patent No. 6421012) in view of Huang et al (US Patent No. 6309914) (hereinafter Huang) and further in view of Fjelstad (US Patent 4482445).** Heckaman and Huang teach all the limitations disclosed in claim 29, however he does not explicitly teach each opening having respective rounded over edges adjacent the first and the second surfaces. Fjelstad teaches dielectric laminate wherein comprising a plurality of holes, wherein the edges are smoothly rounded (column 3, lines 54-61). It would have been obvious to one of the ordinary skill in the art during the time the invention was made to use rounded hole edges as taught by Fjelstad, on both side of the dielectric layer taught by Heckaman (opening taught by Huang) for the purpose of diffusing stress normally concentrated at the hole edges and minimizing "corner crack" (column 3, lines 54-60).

7. **Claims 38 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over in the view of Heckaman (US Patent No. 6421012) in view of Huang et al (US Patent No. 6309914) (hereinafter Huang) and further in view of Jolly et al (US Patent No. 5269880).** Heckaman and Huang teach all the limitations disclosed in claims 29 and 37, however he does not explicitly teaches that the diameter of openings is in the range of about 0.5 to 20 um and that the spacing between the adjacent openings on each of the opposing sides ranges from about 20-200um. Jolly teaches openings having a diameter in the range of 1.5 to 2 um (lines 41 and 42). It would have been obvious to one of the ordinary skill in the art during the time the invention was made to have holes with diameter of 2 um as taught by Jolly and have the spacing between the

corresponding holes in the range of 20 -200 um, in modified Heckaman's device, because it is an obvious matter of design choice to change the spacing length to about 20 to 200 microns and modify hole diameter to a range of about 0.5 -20 um, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955). Furthermore the other important thing to note is the fact that the spacing between the openings as well as their diameter does not change the functionality of the device.

Response to Arguments

8. Applicant's arguments filed April 22, 2008 have been fully considered but they are not persuasive.

9. With respect to the applicant's assertion on page 5, asserting that "Huang does not teach or suggest the holes are used to conduct an etchant to separate the separator from a semiconductor substrate underneath", the examiner agrees that Huang does not teach this limitation, however as mentioned in the section "Claim Language" above, the newly added limitation is a use language and therefore it does not alter the actual structure of the component. Thus it fails to modify the scope of the independent claim.

10. Furthermore, bridging to the next page, the applicant alleges that there would be "no reason one of ordinary skill in the art at the time of the invention would need the posts 61' and 51' of Huang to securely attach the primary substrate 154 to the secondary substrate 156 of Heckman as the Examiner applies". The examiner agrees

that Heckman teaches spacers, thus the Huang's posts are not the elements the examiner originally wished to incorporate into Heckman's structure. Instead the recess holes (element 51) that allow positioning the posts at the predetermined position are the one of interest. The examiner intended to incorporate the teaching of Huang about recesses (i.e. holes) that improve the alignment of the spacers, into Heckman's structure, wherein the spacers taught in the primary prior art could also be retained in the opening/recesses for better placement. Consequently, the examiner maintains that clearly there is a motivation to combine those two teachings, in particular preventing misplacement.

11. Furthermore, for better understanding of what the examiner meant by posts and recesses, the figure 9 in Huang's reference should clearly illustrate the relation between those two elements and benefits arising from that structure. In particular posts are denoted with numeral 61' and openings are denoted with numeral 51'. After the lower and upper substrate are placed one on top of the other, the posts 61' should align with the respective openings 51', hence the two substrate are precisely align. The examiner intended to incorporate this idea into Heckman's structure wherein his spacers could also be placed within openings allowing for better placement. Thus as mentioned in the paragraph above the main advantage of combining those two art could boil down to preventing misplacement between two substrates.

12. Consequently claims 29 and 34-41 remain rejected.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

14. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Inquiry

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANGELA M. LIE whose telephone number is (571)272-8445. The examiner can normally be reached on M-F.

16. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on 571-272-1834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2163

17. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Wilson Lee/
Primary Examiner, Art Unit 2163

/Angela M Lie/
Examiner, Art Unit 2163